

## 52-06-05 (299-W15-79) Log Data Report

### Borehole Information:

<b>Borehole:</b> 52-06-05 (299-W15-79)			<b>Site:</b> TY Tank Farm		
<b>Coordinates (WA St Plane)</b>		<b>GWL<sup>1</sup> (ft):</b>	n/a <sup>2</sup>	<b>GWL Date:</b>	n/a
<b>North</b>	<b>East</b>	<b>Drill Date</b>	<b>TOC<sup>3</sup> Elevation</b>	<b>Total Depth (ft)</b>	<b>Type</b>
136372	566755	08/52	206 m (674.6 ft)	100	cable tool

### Casing Information:

<b>Casing Type</b>	<b>Stickup (ft)</b>	<b>Outer Diameter (in.)</b>	<b>Inside Diameter (in.)</b>	<b>Thickness (in.)</b>	<b>Top (ft)</b>	<b>Bottom (ft)</b>
Steel (welded)	0	8.625	8.0	0.3125	0	150

### Borehole Notes:

The casing information is derived from *Hanford Wells* (Chamness and Merz 1993). The coordinates and TOC elevation are derived from HWIS<sup>4</sup>. Top of casing is located approximately 0.5 ft below grade inside a plastic valve box.

### Logging Equipment Information:

<b>Logging System:</b>	Gamma 2F	<b>Type:</b>	NMLS
<b>Calibration Date:</b>	11/01	<b>Calibration Reference:</b>	GJO-2002-291-TAR
		<b>Logging Procedure:</b>	MAC-HGLP 1.6.5, Rev. 0

### Neutron Moisture Logging System (NMLS) Log Run Information:

<b>Log Run</b>	<b>1</b>	<b>2 Repeat 60-70 ft</b>	<b>3</b>	<b>4</b>	<b>5</b>
Date	8/20/02	8/20/02			
Logging Engineer	Pearson	Pearson			
Start Depth (ft)	0.0	60.0			
Finish Depth (ft)	70.0	148.0			
Count Time (sec)	15	15			
Live/Real	L	L			
Shield (Y/N)	N	n/a			
MSA Interval (ft)	0.25	0.25			
ft/min	n/a	n/a			
Pre-Verification	BF007CAB	BF007CAB			
Start File	BF007000	BF008000			
Finish File	BF007280	BF008352			
Post-Verification	BF008CAA	BF008CAA			

### **Logging Operation Notes:**

Logging was performed to assess variations in subsurface moisture content that may be related to evidence of contaminant movement in borehole 52-03-06 in TY Tank Farm as recommended in the quarterly report for the Hanford Tank Farms Vadose Zone Monitoring Project (DOE 2002). The moisture logging will support an evaluation to be reported in Occurrence Report PER2002-2444.

Logging measurements are referenced to the top of the 8-in. casing. A repeat section was collected in this borehole between 60 and 70 ft. The borehole was swabbed on 8/19/02, and no contamination or water was detected.

### **Analysis Notes:**

<b>Analyst:</b>	Henwood	<b>Date:</b>	09/09/02	<b>Reference:</b>	GJO-HGLP 1.6.3, Rev. 0
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A casing correction for 0.322-in.-thick casing was applied for the 8-in. steel casing. This value represents the published thickness for ASTM schedule-40 steel pipe, a common borehole casing at Hanford. However, the measured borehole casing thickness was 0.3125 in. It appears the calibration constants determined for 8-in. (0.322-in.-thick) casings slightly overestimate the volumetric moisture.

Each spectrum collected during a log run was processed in batch mode using APTEC SUPERVISOR to determine count rates. Volumetric moisture was calculated with an EXCEL worksheet template using constants determined from annual calibration measurements.

### **Log Plot Notes:**

A log plot is provided for volumetric moisture in percent.

### **Results and Interpretations:**

The neutron moisture log primarily responds to moisture present in the surrounding formation. In general, an increase in total neutron counts reflects an increase in moisture content. Moisture content may increase in sediments of relatively high silt or clay content. These increases often coincide with intervals of man-made contamination that have been driven through the vadose zone by moisture. Interpretation of moisture in this borehole should be performed as it relates to the baseline spectral gamma data acquired between 1995 and 2000.

The repeat section shows good agreement of depth and moisture content between log runs.

### **References:**

Chamness, M.A., and J.K. Merz, 1993. *Hanford Wells*, PNL-8800, prepared by Pacific Northwest Laboratory for the U.S. Department of Energy.

U.S. Department of Energy (DOE) 2002. *Hanford Tank Farms Vadose Zone Monitoring Project Quarterly Summary Report for 3rd Quarter FY 2002*, prepared by S.M. Stoller Corp. for the Grand Junction Office, Grand Junction, Colorado, August.

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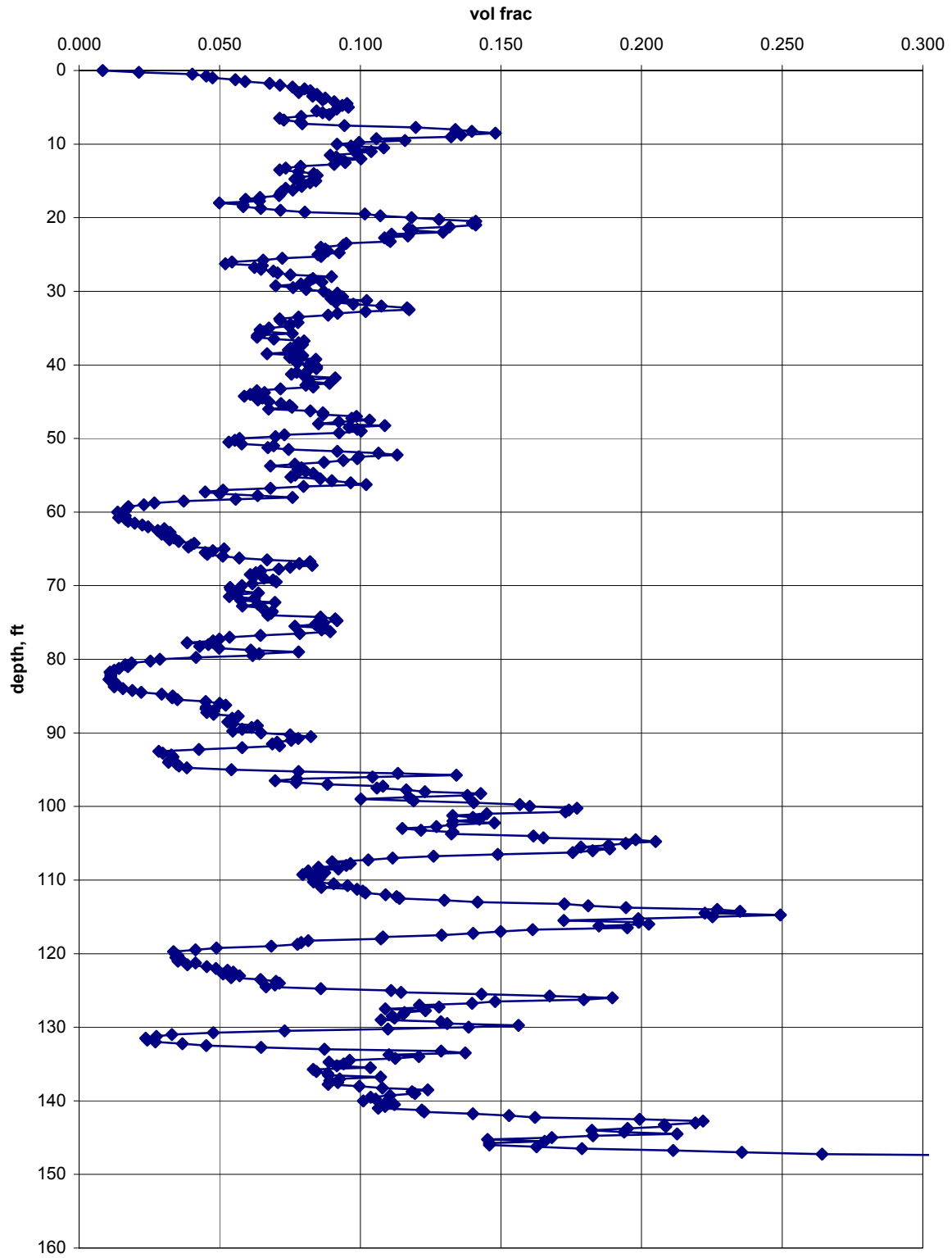
<sup>1</sup> GWL – groundwater level

<sup>2</sup> N/A – not available

<sup>3</sup> TOC – top of casing

<sup>4</sup> n/a – not applicable

# 52-06-05 Neutron Moisture Log



# 52-06-05 Neutron Moisture Log Repeat Section

